ABSTRACT OF THE DISCLOSURE

The present invention is illustrated in a method of power factor control for a power regulation system connected for supplying electric power to a reactive load. The system includes a microcomputer for supplying gating signals to an electronic switching device such as a triac for controlling the conduction phase angle of the triac to control the application of alternating current (AC) electric power to the load. The method comprises monitoring of the waveform of the AC voltage applied to the load and determining for each of the half-cycles of the waveform a timed event when the absolute value of the magnitude of the waveform transitions through a reference magnitude.

A peak of the voltage waveform is determined. The process is repeated for the AC current waveform and the corresponding peaks of the current waveform identified. The time delay between a designated peak of the voltage waveform and a designated peak of a corresponding half-cycle of the current waveform is representative of the power factor of power supplied to the load and the applied voltage is adjusted in a manner to bring the power factor towards unity, i.e., by reducing the measured time delay. The system also monitors peak values of the AC current and limits the power factor adjustment to prevent current values from falling below a selected minimum value so as to prevent motor stall or overheat. Typically, the adjusting process removes voltage from the load for a portion of each half-cycle of the AC voltage waveform either by gating the triac out of conduction at beginning or end of a half-cycle or by pulse width modulation.